

Application Filing Date: December 9, 2003

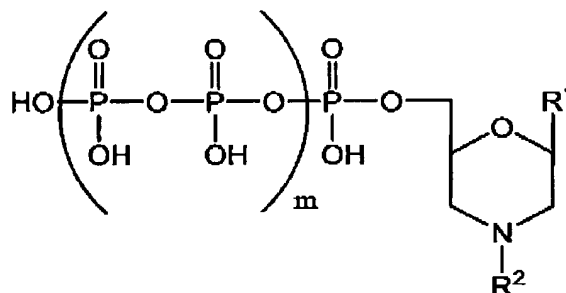
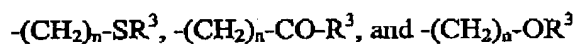
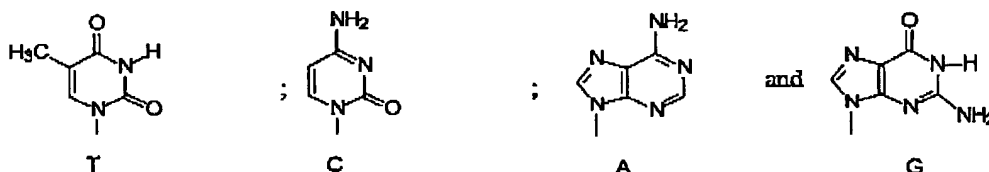
Attorney Docket No. 025219-442
Page 2 of 6**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (Canceled).

Claim 2 (New): A morpholino-nucleotide of the formula:

wherein R^1 represents a nucleic base, m is 0 or 1, and R^2 is selected from the group consisting of:in which n is an integer ranging from 1 to 12 and R^3 is selected from the group consisting of a label, a protein, an enzyme, a fatty acid, and a peptide.Claim 3 (New): The morpholino-nucleotide of claim 2 wherein R^1 is a natural nucleic base selected from the group consisting of adenine, guanine, cytosine, thymine, uracil, xanthine, hypoxanthine, and 2-aminopurine.Claim 4 (New): The morpholino-nucleotide of claim 2 wherein R^1 is selected from the group consisting of:

Application Filing Date: December 9, 2003

Attorney Docket No. 025219-442
Page 3 of 6

Claim 5 (New): The morpholino-nucleotide of claim 2 wherein R^3 is a label selected from the group consisting of radioactive products, luminescent products, electroluminescent and fluorescent products, and enzymatic labels.

Claim 6 (New): The morpholino-nucleotide of claim 5 wherein R^1 is a natural nucleic base selected from the group consisting of adenine, guanine, cytosine, thymine, uracil, xanthine, hypoxanthine, and 2-aminopurine.

Claim 7 (New): The morpholino-nucleotide of claim 2 wherein R^3 is a fluorophore.

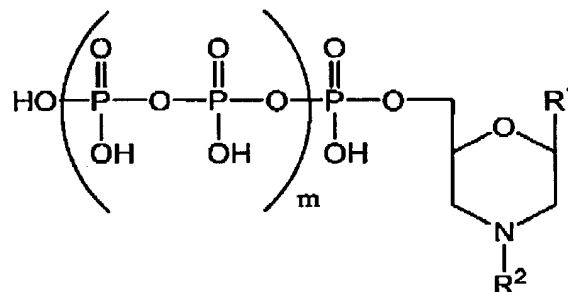
Claim 8 (New): The morpholino-nucleotide of claim 7 wherein R^1 is a natural nucleic base selected from the group consisting of adenine, guanine, cytosine, thymine, uracil, xanthine, hypoxanthine, and 2-aminopurine.

Claim 9 (New): The morpholino-nucleotide of claim 2 wherein R^3 is selected from the group consisting of fluorescein, biotin, and rhodamine.

Claim 10 (New): The morpholino-nucleotide of claim 9 wherein R^1 is a natural nucleic base selected from the group consisting of adenine, guanine, cytosine, thymine, uracil, xanthine, hypoxanthine, and 2-aminopurine.

Claim 11 (New): The morpholino-nucleotide of claim 2 wherein m is 0.

Claim 12 (New): A morpholino-nucleotide of the formula:

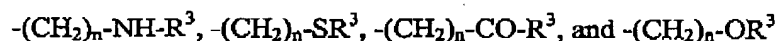


wherein R^1 is a natural nucleic base selected from the group consisting of guanine, cytosine, thymine, uracil, xanthine, hypoxanthine, and 2-aminopurine; m is 0 or 1; and R^2 is selected from the group consisting of:

Application Filing Date: December 9, 2003

Attorney Docket No. 025219-442

Page 4 of 6



in which n is an integer ranging from 1 to 12 and R^3 is selected from the group consisting of a label, a protein, an enzyme, a fatty acid, and a peptide.

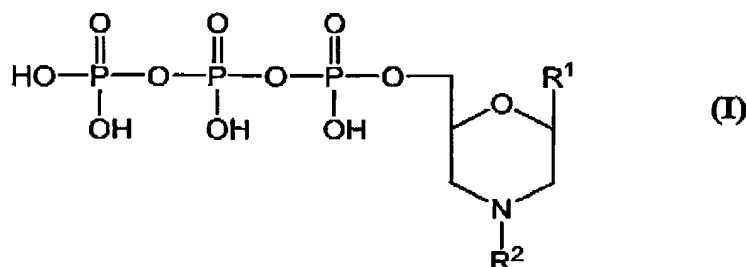
Claim 13 (New): The morpholino-nucleotide of claim 12 wherein R^3 is a label selected from the group consisting of radioactive products, luminescent products, electroluminescent and fluorescent products, and enzymatic labels.

Claim 14 (New): The morpholino-nucleotide of claim 12 wherein R^3 is a fluorophore.

Claim 15 (New): The morpholino-nucleotide of claim 12 wherein R^3 is selected from the group consisting of fluorescein, biotin, and rhodamine.

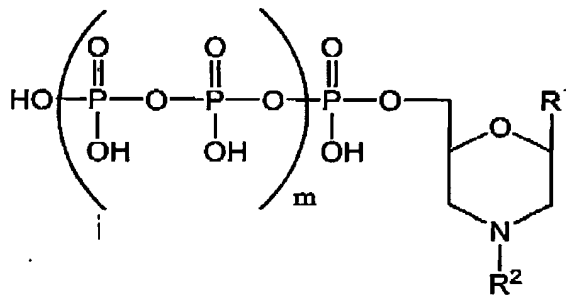
Claim 16 (New): The morpholino-nucleotide of claim 12 wherein m is 0.

Claim 17 (New): A morpholino-nucleotide of formula I:



wherein R^1 is a nucleic base selected from the group consisting of adenine, guanine, cytosine, and thymine; R^2 is $-(\text{CH}_2)_4\text{-NH-R}^3$; and R^3 is $-\text{C}(\text{S})\text{-NH-fluorescein}$.

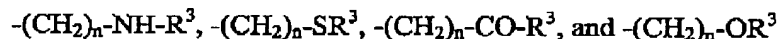
Claim 18 (New): A morpholino-nucleotide of the formula:



Application Filing Date: December 9, 2003

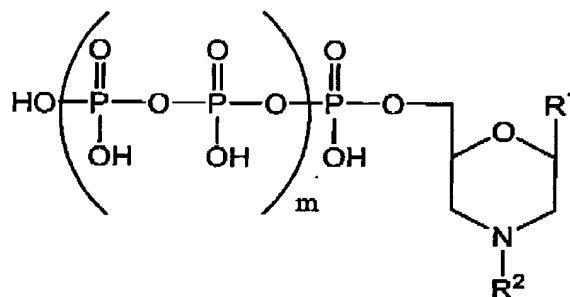
Attorney Docket No. 025219-442
Page 5 of 6

wherein R^1 represents a nucleic base, m is 0 or 1, and R^2 is selected from the group consisting of:

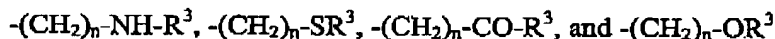


in which n is an integer ranging from 1 to 12 and R^3 is selected from the group consisting of a label, a protein, an enzyme, a fatty acid, and a peptide.

Claim 19 (New): A morpholino-nucleotide of the formula:



wherein R^1 is a natural nucleic base selected from the group consisting of adenine, guanine, cytosine, thymine, uracil, xanthine, hypoxanthine, and 2-aminopurine; m is 0 or 1; and R^2 is selected from the group consisting of:



in which n is an integer ranging from 1 to 12 and R^3 is selected from the group consisting of a label, a protein, an enzyme, a fatty acid, and a peptide.